NOVEMBER/DECEMBER 2024

FAEL32/CAEL34 — BASIC PHYSICS – I (ALLIED)

Time : Three hours Maximum : 75 marks

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SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is radius of gyration?
2. Write the moment of inertia of circular disc.
3. State Hooke's law.
4. What is called torsional?
5. State Stoke's law.
6. Define viscosity of a liquid.
7. State second law of thermodynamics.
8. Define entropy.
9. What is the frequency of ultrasonic waves?
10. Write the Sabine's formula.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Find the moment of inertia of a uniform circular disc about an axis passing through its centre and perpendicular to its plane.

Or

(b) State and explain Newton's law of gravitation.

12. (a) Explain the different types of elastic moduli.

Or

(b) Find the expression for energy stored in a wire.

13. (a) Obtain the expression for terminal velocity.

Or

(b) Determine the excess of pressure inside a soap bubble.

14. (a) State and explain coefficient of thermal conductivity.

Or

(b) Differentiate reversible process and irreversible process.

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15. (a) Write a note on acoustics of buildings.

Or

(b) Briefly describe absorption coefficient of sound of a material.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain how g varies with altitude, latitude and depth. Obtain a general relation for the variation of g in each case.

17. Describe with relevant theory, an experimental to determine the young's modulus of the material of a bar by uniform bending.

18. Illustrate the Jaegar's method to determine surface tension of a liquid.

19. Explicate Lee's disc method to find the coefficient of thermal conductivity of bad conductors.

20. Describe in detail one method of ultrasonic waves production.

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